

**What is claimed is:**

1. A system for producing, maintaining, and controlling a virtual electrode for provision of an ablative therapy through the virtual electrode to a target tissue of a body of a patient, the system providing a conductive fluid and an RF power to the target tissue to create the virtual electrode, the system comprising:

- a source of conductive fluid selectively providing conductive fluid to the target tissue;
- a surgical instrument including an electrode for delivering RF power to distributed conductive fluid to create a virtual electrode;
- a primary temperature sensor for sensing a temperature of the body of the patient in an area of the target tissue;
- an impedance detector for measuring information indicative of an impedance of the body of the patient in the area of the target tissue to passage of RF current; and
- a processor for determining a desired RF power applied by the electrode as
$$\text{Ablation\_RF\_Power} = (\text{max\_RF\_Power}) * (\text{proportional feedback} + \text{integral feedback} + \text{derivative feedback});$$

wherein max\_RF\_Power is a maximum power level determined as a function of the measured impedance, proportional feedback is a function of a proportion of the sensed temperature relative to a threshold temperature, integral feedback is a function of an integral of the sensed temperature relative to the threshold temperature, and derivative feedback is a function of a derivative of the sensed temperature relative to the threshold temperature.

2. The system of claim 1, wherein the processor determines the desired RF power as
$$\text{Ablation\_RF\_Power} = (\text{max\_RF\_Power}) * (\text{Error\_Proportion} (n) * K_p + \text{Error\_Integral}/K_i + \text{Error\_Derivative} * K_d);$$
 wherein Error\_Proportion (n) is the difference between the sensed temperature and the threshold temperature,  $K_p$  is a proportional gain constant, Error\_Integral

is a function of a magnitude of the difference between the sensed temperature and the threshold temperature,  $K_i$  is an integral gain constant,  $\text{Error\_Derivative}$  is a function of a rate of change of the difference between the sensed temperature and the threshold temperature, and  $K_d$  is a derivative gain constant.

3. A method for producing, maintaining, and controlling a virtual electrode for provision of an ablative therapy through the virtual electrode to a target tissue of a body of a patient by applying RF power to a conductive fluid distributed to the target tissue, the method comprising:

- a. establishing a total time of RF power application to achieve desired ablation ( $t_{total}$ );
- b. distributing conductive fluid to the target tissue;
- c. applying RF power to the distributed conductive fluid;
- d. pausing application of the RF power; and
- e. resuming application of RF power for a time period ( $t_{resume}$ ) as a function of a difference between  $t_{total}$  and a time period during which RF power was applied prior to the step of pausing plus a correction factor.

4. The method of claim 3, wherein the correction factor is  $1.5t_{pause}$ , wherein  $t_{pause}$  is a time period during which application of RF power was paused.

5. The method of claim 3, wherein the corrective factor is  $t_{reheat}$ , wherein  $t_{reheat}$  is a time period for the target tissue to reach a temperature approximating a temperature of the target tissue prior to the step of pausing application of RF power.